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Hence ten days on chronometer *C* equals 10 days, 1 hour, 12 minutes and 55 seconds on chronometer *A*. Therefore the time by the true watch *A* is 12 minutes, 55 seconds past 1 P. M. on the tenth day.

Also solved by *CHARLES C. CROSS*, and *G. B. M. ZERR*.



PROBLEMS FOR SOLUTION.

ALGEBRA.

90. Proposed by J. MARCUS BOORMAN, Consultative Mechanician and Counselor at Law, Woodmere, Long Island, N. Y.

Fully solve $x^2 + y^2 + m(x+y) = m^2 \dots \dots \text{(I)}$; $x^2 + y^2 + xy = m^2 \dots \dots \text{(II)}$; give process, roots, and corollary. [Solved in part, Cirode's Algebra, page 202.]

91. Proposed by NELSON S. RORAY, Professor of Mathematics, South Jersey Institute, Bridgeton, N. J.

Solve the following without making use of the determinant notation and prove that the results obtained are the roots.

$$\begin{aligned}10x - 2y + 4z &= 5, \\3x + 5y - 3z &= 7, \\x + 3y - 2z &= 2.\end{aligned}$$

92. Proposed by W. F. BRADBURY, A. M., Head Master Latin School, Cambridge, Mass.

Find the sum to n terms of $1 + 3^3 + 5^3 + \dots \dots$ [From *Charles Smith's Elementary Algebra*, page 403.]

* * * Solutions of these problems should be sent to J. M. Colaw not later than December 10.

GEOMETRY.

105. Proposed by B. F. FINKEL, A. M., M.Sc., Professor of Mathematics and Physics, Drury College, Springfield, Mo.

Sind *A*, *B*, *C*, *D* vier harmonische Punkte und beschreibt man über dem Durchmesser *AC* einen Kreis, von welchem *S* ein beliebiger Punkt ist, so wird derjenige Kreisbogen, welcher innerhalb des Winkels *BSD* liegt, entweder von *A* oder von *C* Strecke *PB* halbiert. [*Reye's Geometrie der Lage*, page 191.]

106. Proposed by C. HORNUNG, A. M., Professor of Mathematics, Heidelberg University, Tiffin, Ohio.

Upon the sides of any triangle *ABC* let the equilateral triangles *ABD*, *BCE*, and *CAF* be described, and let their exterior sides produced intersect, *BE* and *AF* in *K*, *DB* and *FC* in *L*, and *DA* and *EC* in *M*. Prove *DK*, *EL*, *FM*, parallel.

107. Proposed by T. W. PALMER, A. M., Professor of Mathematics, University of Alabama.

Construct a triangle, given base, vertical angle and radius of inscribed circle.

* * * Solutions of these problems should be sent to B. F. Finkel not later than December 10.